

ABSTRACT

Most counties have bridges that are no longer adequate, and are faced with large capital expenditure for replacement structures of the same size. In this regard, low water stream crossings (LWSCs) can provide an acceptable, low cost alternative to bridges and culverts on low volume and reduced maintenance level roads. In addition to providing a low cost option for stream crossings, LWSCs have been designed to have the additional benefit of streambed stabilization.

Considerable information on the current status of LWSCs in Iowa, along with insight of needs for design assistance, was gained from a survey of county engineers that was conducted as part of this research (Appendix A). Copies of responses and analysis are included in Appendix B.

This document provides guidelines for the design of LWSCs. There are three common types of LWSCs: unvented ford, vented ford with pipes, and low water bridges. Selection among these depends on stream geometry, discharge, importance of road, and budget availability. To minimize exposure to tort liability, local agencies using low water stream crossings should consider adopting reasonable selection and design criteria and certainly provide adequate warning of these structures to road users. The design recommendations included in this report for LWSCs provide guidelines and suggestions for local agency reference. Several design examples of design calculations are included in Appendix E.